

PUBLIC HEALTH FACT SHEET

Human Granulocytic Ehrlichiosis (HGE)

Massachusetts Department of Public Health, 305 South Street, Jamaica Plain, MA 02130

What is human granulocytic ehrlichiosis (HGE)?

HGE is caused by bacteria (germs) that attack certain white blood cells called granulocytes. It was first recognized as a human disease in the United States in 1994.

Where is HGE found?

In the United States, HGE is most commonly found in the Northeast, upper Midwest, and sections of California. In Massachusetts, the majority of cases are reported from the southeastern coast, Nantucket, and Martha's Vineyard.

How is HGE spread?

The bacteria that cause HGE are spread by the deer tick. Deer ticks cling to plants near the ground in brushy, wooded or grassy places. The ticks, which cannot jump or fly, climb onto animals and people who brush against the plants. Very young ticks, called larvae, which are no bigger than the period at the end of this sentence, pick up the bacteria by biting infected small animals, such as the white-footed mouse. Slightly older ticks, called nymphs, that are the size of a poppy seed, are the stage most likely to bite and infect humans. Adult deer ticks can also spread the bacteria, but they are not as great a risk as nymphs because the adults are less likely to bite humans and they are easier to see and remove. Adult deer ticks are about the size of a sesame seed. The highest risk of HGE occurs between April and September, when ticks are most active. It is believed that the tick must be attached and feeding for at least 24 hours before it can transmit the bacteria.

How soon do symptoms appear after a tick bite?

Symptoms of HGE usually begin to appear between 1 and 3 weeks after being bitten by an infected tick.

What are the symptoms of HGE?

Symptoms of HGE usually include fever, headache (that doesn't get better with over-the-counter medicine), chills, muscle aches, and fatigue. Less commonly, some people may have abdominal pain, nausea, vomiting, diarrhea, cough, and joint aches. Potentially life-threatening complications can occur if the disease is not treated early. The elderly, people with diabetes or collagen vascular disease, and people with weakened immune systems may be more likely to develop serious complications. It is possible to get HGE and another tick-borne disease, like Lyme disease or babesiosis, from the same tick bite. People who get more than one of these diseases at the same time may also be more seriously affected.

Is there a treatment for HGE?

HGE can be effectively treated with antibiotics. Early recognition and treatment are important to prevent complications.

How can you prevent HGE?

There is currently no vaccine available to prevent HGE. The best prevention is to avoid tick bites. Deer ticks are most numerous near the ground in brushy, wooded or high grassy areas. Ticks are most active during the

months of April through September. If you live in or visit an area likely to have deer ticks, take the following precautions:

- Wear a long-sleeved shirt and long pants, and tuck your pant legs tightly into your socks. (Light colors will help you spot the ticks on your clothes before they reach your skin.)
- Stay to the middle of paths when walking or hiking.
- On exposed skin use a repellent that contains the active ingredient DEET (the chemical N-N-diethyl-meta-toluamide). Always follow the directions on the label. DEET can be poisonous if overused. Avoid using repellents with DEET concentrations above 10-15% for children and with concentrations above 30-35% for adults. Do not apply repellents to the hands or faces of young children. Repellents should never be used on infants. Cream, lotion or stick formulas with low amounts of alcohol are best for use on the skin. The insecticide permethrin, which kills ticks on contact, can also be used to protect against ticks. In order to work well this chemical can only be used on clothing.
- Make the area around your home less attractive to ticks by removing leaf litter and brush, mowing lawns regularly, and trimming low-lying bushes. Keeping woodpiles and birdfeeders off the ground and in sunny areas away from your home can help keep away rodents that may have ticks on them. If you use pesticides around your home, always follow the label instructions and never use pesticides near streams or other bodies of water.
- Talk to your veterinarian about the best way to protect your pets against ticks.
- Check yourself, your children, and your pets for ticks every day. Remember deer ticks are very tiny. The nymphs are only the size of a poppy seed. Their favorite places to attach are on the legs, in the groin, in the armpits, along the hairline, and in or behind the ears.
- Remove any ticks promptly using fine point tweezers. Do not use your bare fingers to remove a tick. Grasp the tick as close to the skin as possible and, without squeezing or twisting, pull the tick straight out with steady pressure. Once removed, disinfect the area with rubbing alcohol.
- Know the symptoms of HGE. If you have been someplace likely to have ticks between April and September and you develop HGE symptoms, see a doctor right away.

Where can you get more information?

- Your doctor, nurse, or clinic
- Your local board of health (listed in the telephone directory under “government”)
- Massachusetts Department of Public Health, Division of Epidemiology and Immunization at (617) 983-6800 or toll-free at (888) 658-2850 or on the MDPH website at <http://www.mass.gov/dph>
- Massachusetts Poison Control Center (concerning adverse reactions to repellents or pesticides) (617) 232-2120 (Boston) or 1-800-682-9211 (other areas in Massachusetts) or 1-888-244-5313 (hearing impaired)